SACRED HEART COLLEGE(AUTONOMOUS), THEVARA						
DEPARTMENT OF COMPUTER SCIENCE						
COURSE PLAN						
ACADEMIC YEAR 2016-2017						
PROGRAMME	BACHELOR OF COMPUTER APPLICATIONS [MOBILE APPLICATIONS AND CLOUD TECHNOLOGY]			**SEMESTER**		1
COURSE CODE AND TITLE	U1CPCMT1 Foundation of Mathematics			**CREDIT**		4
HOURS/WEE	4			**HOURS/SEM**		60
FACULTY	Neethu A S					
COURSE OBJECTIVES:						
1	Understand the concepts and prove statements about sets and functions					
2	Understand relations, its properties, represention, equivalence relations and partial ordering					
3	Understand and apply concepts of Prepositional logic, Predicates and Quantifiers					
4	Familiarize mathematical Symbols and standard methods of proofs.					
5	Understand the basic concepts of Number theory					
CUM. HOURS	**DATE**	**TOPIC**	**LEARNING RESOURCES**	**NO. OF HOURS**	**VALUE ADDITIONS**	**COURSE OUTCOME**
MODULE I						
1		Set Theory Introduction	Lecture	1		CO1
2		Basic Operations on Sets	Lecture	1		CO1
4		Set Identities	Lecture	2		CO1
5		Computer Representation of sets	Lecture	1		CO1
6		Functions	Lecture	1		CO1
7		Algebraic operations on real Functions	Lecture	1		CO1
8		Composition of Functions	Lecture	1		CO1
9		Bijective Functions	Lecture	1		CO1
10		Inverse Functions	Lecture	1		CO1
12		Graphs of functions	Lecture	2		CO1
14		Increasing and Decreasing functions	Lecture	2		CO1
15		Sequences	Lecture	1		CO1
16		Summations	Lecture	1		CO1
17		Cardinality	Lecture	1		CO1
MODULE II						
18		Relations Introduction	Lecture	1		CO2
21		Types of Relations on a Set	Lecture	3		CO2
22		Combinations of Relations	Lecture	1		CO2
23		Representation of relations on Finite Sets	Lecture	1		CO2

24		Representating relations using Digraphs	Lecture	1		CO2
25		n-ary relations and their applications	Lecture	1		CO2
26		operations on n-ary relations	Lecture	1		CO2
27		Equivalence Relations	Lecture	1		CO2
28		Partitions	Lecture	1		CO2
30		Partial Oderings	Lecture	2		CO2
32		Hasse Diagrams	Lecture	2		CO2
33		Covering Relation	Lecture	1		CO2
34		Maximal and Minimal elements	Lecture	1		CO2
35		Lattices	Lecture	1		CO2
36		Toplogical Sorting	Lecture	1		CO2
37		Revision	Lecture	1		CO2
TEST I						
MODULE III						
38		Mathematical Logic Introduction	Lecture	1		CO3
39		Propositions -simple and compound	Lecture	1		CO3
41		Logical operators	Lecture	2		CO3
43		Conditional Statements	Lecture	2		CO3
44		Biconditional Statements	Lecture	1		CO3
45		Precedence of Logical Operators	Lecture	1		CO3
46		Logic and Bit operations	Lecture	1		CO3
47		Tautologies and contradictions	Lecture	1		CO3
49		Logical Equivalences - Laws of logic	Lecture	2		CO3
50		Predicates	Lecture	1		CO3
53		Quantifiers - Universal Quantifiers	Lecture	3		CO3
54		Quantifiers - Existential Quantifiers	Lecture	1		CO3
55		Binding Variables	Lecture	1		CO3
56		Logical Equivalence involving quantifiers	Lecture	1		CO3
57		Negation of quantified expressions	Lecture	1		CO3
58		Nested Quantifiers	Lecture	1		CO3

59		Arguments	Lecture	1		CO3
60		Rules of Inference for propositions	Lecture	1		CO3
61		Rules of Inference for quantified statements	Lecture	1		CO3
64		Methods of proving theorems	Lecture	3		CO4
MODULE IV						
65		Theory of Numbers - Divisibility	Lecture	1		CO5
66		Prime and Composite Numbers	Lecture	1		CO5
67		GCD	Lecture	1		CO5
68		Theorems on division	Lecture	1		CO5
69		Divisors of a given number	Lecture	1		CO5
70		Euler's Function	Lecture	1		CO5
71		Congruences -Theorems	Lecture	1		CO5
72		Fermat's theorem	Lecture	1		CO5
73		Wilson's theorem	Lecture	1		CO5
74		Lagrange's theorem	Lecture	1		CO5
TEST II						
MODULE IV						

TEXT BOOKS & REFERNCES	
1	K.H. Rosen: Discrete Mathematics and its Applications (Sixth edition), Tata McGraw Hill Publishing Company, Ne
2	S. Bernard and J.M Child: Higher Algebra, AITBS Publishers, India,2009
3	

ACADEMIC SESSION PLAN

Name of the Faculty: Mrs. Christy Jacqueline

Course: COMPUTER FUNDAMENTALS AND ORGANISATION

Semester: BCA 1ST yr I sem

Period: From:June 2016 To: NOV 2016

Module	Module Name	Chp	Section	Learning Objectives	Learning Outcomes	Session No.	Hours	Topic	Mode of Delivery	Pre-class readings	Post-class tasks	Ref Books	Web Resources	Activities	Topic Coverage (Actual) including activities
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.1	A & B	Explain the features of computers	Describe the characteristics of computers	1	1	General features of a computer	using power point slide and black board	Introduction to Computers	Revision	Sinha. Computer Fundamentals BPB Pub.	http://ecomputernotes.com/fundamental/introduction-to-computer/what-are-characteristic-of-a-computer		
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.1	A & B	Outline various types of computers	Differentiate among various types of computers	2	1	Generation of computers Part 1	using power point slide and black board		Revision				
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.1	A & B	Describe the working of computer architecture	Demonstrate the working of each component in computer architecture	3	1	Generation of computers Part 2	using power point slide and black board	Classification of computers	Assignment given based on the topic taught on that day.				
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.2	A & B	Describe the functions of various devices of computer	Discuss the working of various devices of computer	4	1	Classification of computers -Personal computer, workstation,	using power point slide and black board						http://www.tutorialspoint.com/computer_fundamentals/computer_generations.htm
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.2	A & B		Explain five basic operations of computer system	5	1	mainframe computer and super computers.	using power point slide and black board			Computer Applications	Revision		
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.2	A & B	Describe the evolution of computers	Discuss the improvement of technology in different generation of computer	6	1	Computer applications – data processing	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.2	A & B	Compare among the different generations of computer	Describe how computers are helpful in various fields.	7	1	Classification of computers -information processing, commercial, office automation	using power point slide and black board				Assignment given based on the topic taught on that day.		https://drive.google.com/folderview?id=0BxuFG9QKNyNOczhnWGZKZzhNNW8&usp=sharing
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.2	A & B	Explain the importance of computers in various fields	Discuss the limitations of computer	8	1	Classification of computers - industry and engineering, healthcare	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.2	A & B		Identify the impact of computer on business and society	9	1	Classification of computers -education, graphics and multimedia.	using power point slide and black board			Comparision of different generations	Assignment given based on the topic taught on that day.		
MODULE 1	GENERAL FEATURES OF A COMPUTER	1.2	A & B			10	1	Comparision of different generations of computers	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 2	COMPUTER ORGANISATION	2.1	A & B	Describe components in computer organisation	List the basic components of computer organisation	1	1	Computer organization	using power point slide and black board			Computer Organisation	Revision	Sinha. Computer Fundamentals BPB Pub.	
MODULE 2	COMPUTER ORGANISATION	2.1	A & B	Elaborate the working of Central Processing Unit	Describe the features of each componentof CPU	2	1	Central processing unit	using power point slide and black board			Computer Memory	Assignment given based on the topic taught on that day.		http://uotechnology.edu.iq/dep-production/textbook_computer/Fundamentals_of_Computers.pdf
MODULE 2	COMPUTER ORGANISATION	2.1	A & B	Explain memory unit	Interpret the structure of Memory unit	3	1	Computer memory – Primary memory	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 2	COMPUTER ORGANISATION	2.1	A & B	Describe the types of memory*	Elaborate on various types of memory*	4	1	Computer memory – Secondary memory	using power point slide and black board			Secondary storage devices	Assignment given based on the topic taught on that day.		http://www.tutorialspoint.com/computer_fundamentals/computer_memory_units.htm
MODULE 2	COMPUTER ORGANISATION	2.2	A & B	Justify the requirement of cache memory in computer	List out the commonly found registers in the CPU and explain their functions.	5	1	Secondary storage devices – Magnetic and optical media.Part 1	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B	Explain the role of secondary memory in storage	Compare volatile and non-volatile memory	6	1	Secondary storage devices – Magnetic and optical media.Part 2	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B	Explain the working of disk storage	Define disk storage	7	1	Secondary storage devices – Magnetic and optical media.Part 3	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B	Elaborate on various types of secondary	Identify the current secondary storage to store	8	1	Secondary storage devices – Magnetic and optical media.Part 4	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B	Explain various types of Input-Output devices used in computer*	Describe the functioning of various input-output devices	9	1	Secondary storage devices – Magnetic and optical media.Part 5	using power point slide and black board			Input Devices	Assignment given based on the topic taught on that day.		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B	Elaborate the importance of OMR, MICR and OCR	Familiarize on OMR, MICR and OCR	10	1	Input Devices Part 1	using power point slide and black board				Revision		https://www.techopedia.com/definition/13265/secondary-storage-device

MODULE 2	COMPUTER ORGANISATION	2.2	A & B		Differentiate magnetic disk and magnetic tape.	11	1	Input Devices Part 2	using power point slide and black board			Output Devices	Revision		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B			12	1	Output Devices Part 1	using power point slide and black board				Revision		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B			13	1	Output Devices Part 2	using power point slide and black board				Revision		
MODULE 2	COMPUTER ORGANISATION	2.2	A & B			14	1	Output Devices Part 3	using power point slide and black board				Revision		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.1	A & B	Elaborate the features of hardware and software resources	List the various hardware and software resources	1	1	Computer hardware and software. Machine language and high level language. Part 1	using power point slide and black board			Computer Hardware and software	Revision	Sinha. Computer Fundamentals BPB Pub.	http://cs.snu.edu/~mullins/cpsc100book/module02_introduction/module02-03_introduction.html
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.1	A & B	Explain the various types of computer languagesand their translators	Distinguish between machine level, assembly level and high level languages	2	1	Computer hardware and software. Machine language and high level language. Part 2	using power point slide and black board			Application Software	Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.1	A & B	Elaborate on security issues in computers	Differentiate system software and application software	3	1	Application software, computer program	using power point slide and black board			Operating System	Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.1	A & B	Describe operating systems used in	Identify what are the security threats in	4	1	Operating system	using power point slide and black board			Computer virus, antivirus and security	Revision		http://www.diffen.com/difference/Hardware_vs_Software
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.1	A & B	Identify the need of translator program in computer	Differentiate between Disk operating system and Windows operating system	5	1	Computer virus, antivirus and computer security. Elements of MS DOS and Windows OS.	using power point slide and black board			Computer Arithmetic	Revision		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B		Give some advantages of Windows over DOS system	6	1	Computer arithmetic Part 1	using power point slide and black board				Assignment given based on the topic taught on that day.		http://www.tutorialspoint.com/computer_fundamentals/computer_number_system.htm
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B	Differentiate between non-positional and positional number system	Elaborate the different types of number system	7	1	Computer arithmetic Part 2	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B	Demonstrate conversion of the number system from one form to another*	Perform the conversion of a given number system to another	8	1	Computer arithmetic Part 3	using power point slide and black board			Binary, Octal and Hexadecimal number systems.	Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B	Illustrate algorithms and flowcharts	Develop an algorithm/flowch art for a specific problem	9	1	Binary, octal and hexadecimal number systems.Part 1	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B	Outline the elements and applications of a database	List the elements and applications of a database	10	1	Binary, octal and hexadecimal number systems.Part 2	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B	Elaborate Logic gates and Boolean expressions*	Explain different types of flowcharts and its notations.	11	1	Binary, octal and hexadecimal number systems.Part3	using power point slide and black board			Basic Gates	Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B		Design a flow diagram using logic gates	12	1	Basic Gates(Demorgans theorems, duality theorem, NOR,NAND,XOR,XNOR gates), Boolean expressions and logic diagrams, Types of Boolean expressions Part 1	using power point slide and black board				Assignment given based on the topic taught on that day.		http://www.byte-notes.com/number-system-computer
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B		Draw up a flowchart to accept any two numbers and display their product.	13	1	Basic Gates(Demorgans theorems, duality theorem, NOR,NAND,XOR,XNOR gates), Boolean expressions and logic diagrams, Types of Boolean Part 2	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B		Draw the circuit diagram that implements the expression using gates having no more than three inputs.	14	1	Basic Gates(Demorgans theorems, duality theorem, NOR,NAND,XOR,XNOR gates), Boolean expressions and logic diagrams, Types of Boolean expressions Part 3	using power point slide and black board			Algorithms and Flowcharts	Assignment given based on the topic taught on that day.		
MODULE 3	COMPUTER HARDWARE AND SOFTWARE	3.2	A & B		X=ABC(A+B)	15	1	Algorithm and flowcharts	using power point slide and black board				Revision		
MODULE 4	MS OFFICE	4.1	A & B	Explain benefits of using MS office	Identify the benefits of MS office	1	1	read sheet. An overview of MSWORD, M	using power point slide and black board			Word and Spreadsheet	Assignment given based on the topic taught on that day.	Sinha. Computer Fundamentals BPB Pub.	http://www.microsoftstore.com/store/msusa/en_US/cat/All-Office/categoryID.69403900
MODULE 4	MS OFFICE	4.1	A & B	Elaborate the features of MS Office	List the featuresof MS office	2	1	Introductiion of MS WORD Part 1	using power point slide and black board			MS Word	Assignment given based on the topic taught on that day.		
MODULE 4	MS OFFICE	4.1	A & B	Illustrate help and security in MS office	Demonstrate help and security in MS office	3	1	Introductiion of MSWORD Part 2	using power point slide and black board				Assignment given based on the topic taught on that day.		

MODULE 4	**MS OFFICE**	**4.1**	**A & B**	Explain the features ofMS word	Use MS word for various documentation tasks	4	1	Introductiion of MSExcel Part 1	using power point slide and black board			MS Excel	Assignment given based on the topic taught on that day.		. http://www.excel-easy.com/
MODULE 4	**MS OFFICE**	**4.1**	**A & B**	Explain merge printing in MS word	Explain the use of AutoFormat feature of Word	5	1	Introductiion of MSExcel Part 2	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 4	**MS OFFICE**	**4.2**	**A & B**	Explain the function of worksheet in MS Excel	Distinguish between workbook and work sheet	6	1	Introductiion of MSExcel Part 3	using power point slide and black board			MS Power Point	Assignment given based on the topic taught on that day.		
MODULE 4	**MS OFFICE**	**4.2**	**A & B**	Illustrate to work with formulae	Perform calculations in an Excel sheet	7	1	Introductiion of MSPowerPoint Part 1	using power point slide and black board				Assignment given based on the topic taught on that day.		. http://blog.hubspot.com/marketing/easy-powerpoint-design-tricks-ht
MODULE 4	**MS OFFICE**	**4.2**	**A & B**	Demonstrate how to create power point presentation	Design a power point presentationwith transitions and animations	8	1	Introductiion of MSPowerPoint Part 2	using power point slide and black board				Assignment given based on the topic taught on that day.		
MODULE 4	**MS OFFICE**	**4.2**	**A & B**	Explain the basic operations performed in PowerPoint	Using a template, create a PPT and do the necessary formatting										
MODULE 4	**MS OFFICE**	**4.2**	**A & B**		Explain the use of Excel's Function Wizard.										
MODULE 4	**MS OFFICE**	**4.2**	**A & B**		List the conversion of text to shapes in PowerPoint										
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.1**	**A & B**	Explain the importance of computer networks	Identify the uses of computer networks in real world	1	1	Network of computers.	using power point slide and black board			Network of Computers	Revision	Sinha. Computer Fundamentals BPB Pub.	. http://www.informit.com/articles/article.aspx?p=1353367
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.1**	**A & B**	Elaborate on transmission technology	Explain how transmission technology is useful in computer networks	2	1	Types of networks :LAN	using power point slide and black board			LAN, MAN	Revision		
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.1**	**A & B**	Differentiate among the types of networks	Identify the differences among the various types of networks available	3	1	Types of networks :MAN	using power point slide and black board			WAN	Revision		
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.1**	**A & B**	List some applications of computer networks	Compare intranet, Internet and extranet.	4	1	Types of networks :WAN	using power point slide and black board			Intranet and Internet	Revision		http://heather.cs.ucdavis.edu/~matloff/Networks/Intro/NetIntro.pdf
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.2**	**A & B**	Elaborate the different types of network with example.		5	1	Intranet and Internet	using power point slide and black board			Internet Applications	Revision		
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.2**	**A & B**	Describe the basic terminologies of internet	Describe how domain name systems work	6	1	Internet applications	using power point slide and black board			WWW	Assignment given based on the topic taught on that day.		
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.2**	**A & B**	Illustrate Domain name system and world wide web	Discuss how browsers and search engines help in real world	7	1	World wide web	using power point slide and black board			Email, browsing, searching	Assignment given based on the topic taught on that day.		
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.2**	**A & B**	Elaborate steps to create an account in Gmail and its features	List the multimedia applications of internet	8	1	E-mail, browsing and searching,	using power point slide and black board			Search Engines	Assignment given based on the topic taught on that day.		
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.2**	**A & B**	Differentiate between browsers and search engines	Explain the purpose of URL in WWW	9	1	search engines	using power point slide and black board			Multimedia Applications	Assignment given based on the topic taught on that day.		
MODULE 5	**INTRODUCTION TO NETWORKING**	**5.2**	**A & B**	Explain multimedia applications	Create your account in yahoo mail	10	1	multimedia applications	using power point slide and black board				Assignment given based on the topic taught on that day.		

SACRED HEART COLLEGE(AUTONOMOUS), THEVARA

DEPARTMENT OF COMPUTER SCIENCE

COURSE PLAN

ACADEMIC YEAR 2016-2017

PROGRAMME	BCA(MOBILE APPLICATIONS AND CLOUD TECHNOLOGY)	**SEMESTER**	1
COURSE CODE AND TITLE	U1CRBCA2 : Programming in 'C'	**CREDIT**	3
HOURS/WEEK	4	**HOURS/SEM**	72
FACULTY NAME	Shailesh S		

COURSE OBJECTIVES:

CO 1	Identify real life problems and convert it to computaional problems
CO 2	Solve problems and Produce algorithms, pseudocodes and flowcharts for it.
CO 3	Discuss and memorize different C programming constructs
CO 4	Apply programming concepts to develop programs for problems
CO 5	Analyze and Compare approches to model efficient and standard programs
CO 6	Evaluvate, compile, run and debug programs

CUM. HOURS	DATE	TOPIC	LEARNING RESOURCES	NO. OF HOURS	VALUE ADDITIONS
		MODULE I			
3		Introduction to computer based problem solving	ppt/board	3	
4		Program design and implementation issues	ppt/board	1	
8		Flowcharts & Algorithms,	ppt/board	4	improved logical thinking
9		Top down design & stepwise refinement,	ppt/board	1	improved logical thinking
10		Programming environment	ppt/board	1	
11		Machine language, assembly language	ppt/board	1	
12		high level languages, Assemblers,	ppt/board	1	
13		Compilers, Interpreters	ppt/board	1	
14		Hands on Session	Lab	1	critical thinking
15		Hands on Session	Lab	1	critical thinking
16		Hands on Session	Lab	1	critical thinking
		MODULE II			
17		Overview of C, Data Types, Constants & Variables	ppt/board	1	
18		Operators & Expressions	ppt/board	1	
20		Branching and Looping	ppt/board	2	
23		Arrays- single dimensional	ppt/board	3	
26		Multidimensional arrays and matrix operations	ppt/board	3	
27		Functions-fundamentals – general form, function arguments, return value,	ppt/board	1	
28		Basic I/O-formatted and Unformatted I/O.	ppt/board	1	
29		Tutorial Session	Lab	1	structured coding
30		Tutorial Session	Lab	1	structured coding

CUM. HOURS	DATE	TOPIC	LEARNING RESOURCES	NO. OF HOURS	VALUE ADDITIONS
31		Tutorial Session	Lab	1	structured coding
		TEST I			
		MODULE III			
32		Scope rules- Local & global variables	ppt/board	1	
33		scope rules of functions, Functions-parameter passing	ppt/board	1	
34		call by value and call by reference	ppt/board	1	
35		calling functions with arrays, argc and argv	ppt/board	1	
37		recursion- basic concepts, ex-towers of Hanoi	ppt/board	2	
38		Tutorial Session	Lab	1	program designing
39		Tutorial Session	Lab	1	program designing
40		Tutorial Session	Lab	1	program designing
		MODULE IV			
41		Pointers- The & and * operator, pointer expression, assignments, arithmetic, comparison,	ppt/board	1	
43		malloc vs calloc, arrays of pointers, pointers to pointers,	ppt/board	2	
45		initializing pointers, pointers to functions, function retuning pointers,	ppt/board	2	
47		Structures- Basics, declaring, referencing structure elements,	ppt/board	2	
49		array of structures, passing structures to functions,	ppt/board	2	
53		structure pointers, arrays and structures within structures,	ppt/board	4	
54		Unions – Declaration, uses, enumerated data-types, typedef	ppt/board	1	
55		Tutorial Session	Lab	1	hands on skills
56		Tutorial Session	Lab	1	hands on skills
57		Tutorial Session	Lab	1	hands on skills
		TEST II			
		MODULE V			
59		File Handling – The file pointer, file accessing functions, fopen, fclose, puc, getc, fprintf,	ppt/board	2	
61		C Preprocessor- #define, #include, #undef, Conditional compilation directives	ppt/board	2	
63		C standard library and header files: Header files, string functions,	ppt/board	2	
64		mathematical functions, Date and Time functions	ppt/board	1	
65		Tutorial Session	Lab	1	modeling projects
66		Tutorial Session	Lab	1	modeling projects
67		Tutorial Session	Lab	1	modeling projects
72		Revision	ppt/board	5	
		TEXT BOOKS & REFERNCES			
1	Let us C by Yashwant Kanetka, 6th Edition, PBP Publication				

CUM. HOURS	DATE	TOPIC	LEARNING RESOURCES	NO. OF HOURS	VALUE ADDITIONS
2	The C programming Language by Richie and Kenninghan, 2004, BPB Publication				
3	Programming in ANSI C by Balaguruswamy, 3rd Edition, 2005, Tata McGraw Hill				

	DATE	TOPIC & NATURE OF ASSIGNMENT (INDIVIDUAL/GROUP – WRITTEN/PRESENTATION)	DATE OF SUBMISSION	MARKS
1				
2				
3				
4				

ACADEMIC SESSION PLAN																		
Name of the Faculty: Mrs.Christy Jacqueline																		
Course: Introduction to Linux																		
Semester: I																		
Period: From: JUNE 2016 To: NOV 2016																		
Module	Module Name	Chp	Section	Learning Objectives	Learning Outcomes	Session No	Hours	Topic	Mode of Delivery	Methodology	Guest Faculty Assistance	Pre-class readings	Post-class tasks	Ref Books	Web Resources	Activities	Topic Coverage (Actual) including activities	Remarks
1	Linux Introduction	1.1	A&B	• Describe the multi-user nature of UNIX*	• Outline the advantages of multi user system	1	1	Introduction to Multi user System	Lecture	ppt			Origin of LINUX					
1	Linux Introduction	1.1	A&B	• Explain the evolution of UNIX along with its versions*	• Summarise the growth of UNIX over the years	2	1	History and Versions of UNIX	Lecture	ppt		History of UNIX	List out the versions of UNIX	Operating System, Maurice J. Bach, Pearson Education, 2010	http://www.tutorialspoint.com/unix/unix-getting-started.htm			
1	Linux Introduction	1.1	A&B	• Describe the features and benefits of UNIX	• List the features and benefits of UNIX	3	1	Features and Benefits of UNIX	Lecture	ppt		Features of UNIX	List out the features of UNIX		http://faculty.tru.ca/nmora/Frequently%20used%20UNIX%20commands.pdf	Implement the features using UNIX commands		
1	Linux Introduction	1.1	A&B	• Explain UNIX system architecture*	• Describe the three major components of UNIX system	4	1	UNIX System Architecture	Lecture	ppt		UNIX system architecture	Identify the components of UNIX system	Programmer's Guide, S. Prata, BPB Publications, and New Delhi, 2011	http://www-users.york.ac.uk/~hcb1/unix20.html			
1	Linux Introduction	1.1	A&B	• Demonstrate how to login and logout UNIX machine in different terminals	• Perform login and logout in UNIX machine			Getting Started (Login/Logout)	Lecture	ppt		UNIX machine introduction	Login and logout UNIX machine	Unix Concepts and Applications, Sumitabh Das, 2010	https://www.doc.ic.ac.uk/~wjk/UnixIntro/Lecture1.html			
1	Linux Introduction	1.1	A&B	• Illustrate how to create and view files using cat command	• Demonstrate file creation and view files using cat command	5	1	Manipulating Files	Lecture	ppt		What is cat command	Create a file using cat command	The UNIX Programming Environment, B.W. Kernighan & R. Pike, Prentice Hall of India. 2009				
1	Linux Introduction	1.1	A&B	• Perform file comparison and view the required contents of a file	• Demonstrate the commands to check disk free space and disk used space	6						What cmp command	Perform file comparison using cmp command	Guide to UNIX Using LINUX, Jack Dent Tony Gaddis, Vikas/ Thomson Pub. House Pvt. Ltd. 2010				
1	Linux Introduction	1.1	A&B	• Describe the commands for checking disk free space and disk used space	• List the popular distributions of Linux	7	1	Disk Related commands	Lecture	ppt/Hands-on		What are disk related commands	Execute disk related commands					
1	Linux Introduction	1.2	A&B	• Outline the various flavors of Linux	• Write the commands used to install and remove Debian and RPM package	8	1	Introduction to various Linux flavors	Lecture	ppt		List out various favours of Linux	Features of each flavours					
1	Linux Introduction	1.2	A&B	• Explain Debian and RPM package	• Explain RPM file format	9	2	Debian and RPM Packages	Lecture	ppt		What is debian and RPM packages	Examples of RPM and debian					
1	Linux Introduction	1.2	A&B	• Discuss Debian and RPM distributions provided by the vendor	• Install Ubuntu	10	1											
1	Linux Introduction	1.2	A&B	• Discuss the rise of Ubuntu and its versions	• Summarise the advantages and versions of Ubuntu	11		Ubuntu	Lecture	ppt		Introduction to Ubuntu	Install Ubuntu					
1	Linux Introduction	1.2	A&B	• Explain the prerequisites for installing Ubuntu	• Demonstrate Linux commands	12	2	History Versions Installation Features	Lecture	ppt								
1	Linux Introduction	1.2	A&B	• Demonstrate how to install Ubuntu		13	1											
1	Linux Introduction	1.2	A&B	• Illustrate the Linux commands along with its options		14	1	Commonly used commands in UNIX (who, pwd, cd, mkdir, rm, rmdir, ls, mv, ln,chmod, cp, grep, sed, awk ,tr, yacc)	Lecture	ppt/Hands-on		Introduction to unix commands	Execute unix commands			Take a scenario and justify it by executing UNIX commmands		
2	THE UNIX FILE SYSTEM	2.1	A&B	• Explain the different types of files in UNIX	• Identify the differences between various file types available in UNIX	1	1	Types of Files	Lecture	ppt		List out Unix files	Distinguish different unix files		http://edusagar.com/articles/view/23/Inode-file-structure-on-Unix			
2	THE UNIX FILE SYSTEM	2.1	A&B	• Describe the structure of a regular file	• Outline the features of a regular file	2	1	Structure of a regular files	Lecture	ppt		What is a regular file	Spot out the features of the regular file		http://www.cyberciti.biz/tips/understanding-unixlinux-filesystem-superblock.html			
2	THE UNIX FILE SYSTEM	2.1	A&B	• Explain the directory structure of the UNIX file system	• Illustrate how UNIX file system can be represented with hierarchical tree structure	3	1	Directory structure of a UNIX file system	Lecture	ppt/Hands-on		Introduction to unix file system	Justify the structure of unix file system with a demo		http://www.linfo.org/inode.html			
2	THE UNIX FILE SYSTEM	2.1	A&B	• Explain the various disk allocation methods	• Describe how each block on a disk is assigned	4	1	Allocation of Disk Blocks	Lecture	ppt		What is a disc block	Function of a disc block		https://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwjf976JgobKAhWLPhQKHZWoBI0QFggwMAM&url=http%3A%2F%2Fcau.ac.kr%2F~bongbong%2Flinux09%2Flinux08.ppt&usg=AFQjCNHo5jb7p5uYXr-wGgsN8iTmHk6Ibg&sig2=655gCYP9xV8c63oOHWoekg			
2	THE UNIX FILE SYSTEM	2.1	A&B	• Describe inode along with its importance	• Prepare a list of various types of information stored in inode			Inodes	Lecture	ppt		What are Inodes	Functions of a inode					
2	THE UNIX FILE SYSTEM	2.1	A&B	• Define superblock and the process of freeing a superblock	• Discuss the purpose of super block	5	1	Superblock	Lecture	ppt		What is a superblock	Significance of superblock					
2	THE UNIX FILE SYSTEM	2.1	A&B	• Illustrate the steps to convert pathname to an inode	• Write an algorithm to convert pathname to an inode			Conversion of a path name to an inode	Lecture	ppt								
2	THE UNIX FILE SYSTEM	2.1	A&B	• Discuss in detail how to assign inode to a new file	• Identify the need of inode assignment	6	1											
2	THE UNIX FILE SYSTEM	2.2	A&B	• Explain various UNIX system calls used to manage file system along with its syntax	• Summarise the functionality of UNIX system calls	7	1	UNIX system calls	Lecture	ppt		What are system calls	Functions of system calls		http://www.cs.uofs.edu/~bi/2003f-html/cs352/syscalls-file.htm			
2	THE UNIX FILE SYSTEM	2.2	A&B	• Describe the various ways of creating files in UNIX	• Create a file using UNIX commands			File Creation	Lecture	ppt		Cat command	Various ways to create a file		http://www.csie.ntnu.edu.tw/~ghhwang/course_slices/OS/Unix_System_Calls.pdf			
2	THE UNIX FILE SYSTEM	2.2	A&B	• Explain how to create special files in UNIX	• Summarize the steps for creating a special files in UNIX	8	1	Creation of special files	Lecture	ppt		What are special files	Steps to create special files					
2	THE UNIX FILE SYSTEM	2.2	A&B	• Illustrate how to change the directory and root	• Use cd command to change present directory	9	1	Changing directory and root	Lecture	ppt/Hands-on		What is directory	Execute commands to move from root to directory and access the files in the directory					
2	THE UNIX FILE SYSTEM	2.2	A&B	• Explain the methods to change owner and mode of file	• Demonstrate the commands chown and chmod	10	1	Changing owner and mode	Lecture	ppt/Hands-on		purpose of chown and chmod commands	Execute chmod and chown commands					
2	THE UNIX FILE SYSTEM	2.2	A&B	• Demonstrate the use of - stat,fstat,pipes and dup	• Describe system calls - stat,fstat,pipes and dup	11	1	Stat and fstat,pipes,dup	Lecture	ppt/Hands-on		What are pipes	With the help of Unix commands illustrate pipes		http://www.tutorialspoint.com/unix/unix-pipes-filters.htm			
2	THE UNIX FILE SYSTEM	2.2	A&B	• Illustrate how to mount and unmount a device or a file system	• Discuss how to mount and unmount files in UNIX file system	12	1	Mounting and unmounting file systems	Lecture	ppt/Hands-on		What is mounting and unmounting	Mount and unmount a file			Technical quiz		
2	THE UNIX FILE SYSTEM	2.2	A&B	• Describe how to link and unlink files in UNIX	• Perform link and unlink			Link and unlink	Lecture	ppt/Hands-on		ln command	Perform linking using ln command					
3	UNIX PROCESS MANAGEMENT	3.1	A&B	• Discuss process state model for the UNIX system and set of state transitions	• Explain process state transition diagram	1	1	Process States and Transitions	Lecture	ppt		List out the various process states	Explain the process transitions for process states					
3	UNIX PROCESS MANAGEMENT	3.1	A&B	• Describe the principles of memory management for processes and kernel	• Differentiate between Kernel's virtual address space and physical address space	2		Layout of System Memory	Lecture	ppt		Princiles of memory management	Distinguish kernal virtual address and physical address space		http://www.linuxnix.com/run-shell-script-linux/			
3	UNIX PROCESS MANAGEMENT	3.1	A&B	• Explain how the operating system and hardware cooperate to do virtual memory translation	• Describe how the process state change from running to terminated				Lecture	ppt								
3	UNIX PROCESS MANAGEMENT	3.1	A&B	• Explain the components of the context of a process	• Illustrate the method of changing mode from user to kernel	3	1	Context of a Process	Lecture	ppt		What is a context of a process	Switch from user to kernal		http://www.ee.surrey.ac.uk/Teaching/Unix/unixintro.html			
3	UNIX PROCESS MANAGEMENT	3.2	A&B	• Explain the phases to create a new process in the UNIX OS	• List the components of register context	4	1	Process Creation	Lecture	ppt		Phases in creating a new process			http://www.cs.vu.nl/~ast/books/mos2/sample-10.pdf	Prepare a presentation (15 slides) on Process state transition.		
3	UNIX PROCESS MANAGEMENT	3.2	A&B	• Explain how to check and handle signals in the process state diagram	• Discuss how fork creates a new process	5	1	Signals	Lecture	ppt		What is fork	Create a process using fork		http://www.cim.mcgill.ca/~franco/OpSys-304-427/lecture-notes/node16.html			
3	UNIX PROCESS MANAGEMENT	3.2	A&B	• Describe how to terminate a process	• Classify signals according to their applications	6	1	Process termination	Lecture	ppt		Process termination	Conditions in which process is terminated		P44http://www.cs.kent.edu/~farrell/osf03/oldnotes/L06.pdf			
3	UNIX PROCESS MANAGEMENT	3.2	A&B	• Define PID and PPID	• Demonstrate how to kill a process	7	1	PID and PPID	Lecture	ppt/Hands-on								
3	UNIX PROCESS MANAGEMENT	3.2	A&B	• Discuss how UNIX invoke the programs through GUI or terminal	• Use PID to control a process	8	1	Invoking other programs	Lecture	ppt		PID and PPID	Kill a process		http://www.cs.umsl.edu/~sanjiv/classes/cs4760/lectures/memory.pdf			
3	UNIX PROCESS MANAGEMENT	3.2	A&B	• Categorize the types of a shell	• Describe how to invoke a file using exec system call	9	2		Lecture	ppt								
3	UNIX PROCESS MANAGEMENT	3.2	A&B	• Explain the process to execute the shell script	• Identify the responsibilities of a shell	10	1	Shell	Lecture	ppt/Hands-on		What is a shell	Significance of a shell		http://duartes.org/gustavo/blog/post/how-the-kernel-manages-your-memory/			

4	VI editor	4.1	A&B	• Define the concept of text processing in vi editor	• Outline the features of vi editor in text processing	1	1	Introduction to Text Processing	Lecture	ppt		What is text processing	Features of VI editor involved in text processing		http://www.emerson.emory.edu/services/editors/vi/vi.html			
4	VI editor	4.1	A&B	• Explain the different modes in vi editor	• Perform the commands used to save and quit a file	2	1	Command Mode and Edit Mode	Lecture	ppt		Intoduction to VI editor	Open VI editor					
4	VI editor	4.1	A&B	• Illustrate the procedure to switch from one mode to another mode	• Perform the commands insert a text, append a text and move cursor position	3	1	Invoking VI	Lecture	ppt/Hands-on		Commands in VI editor	Execute commands to insert text, move cursor position		http://www.oualline.com/vim/10/top_10.html			
4	VI editor	4.1	A&B	• Demonstrate how to delete and insert line in a file	• Define the steps to change from insertion mode to execution mode	4		Deleting and inserting lines	Lecture	ppt					https://www.cs.colostate.edu/helpdocs/vi.html			
4	VI editor	4.1	A&B	• Demonstrate how to delete and replace character in a file	• Perform the commands used for deleting and replacing character in a file	5	1	Deleting and replacing character	Lecture	ppt		Grep command	Execute a shell script to find and replace a character		http://www.linfo.org/wi/search.html			
4	VI editor	4.1	A&B	• Illustrate how to search and replace a string in vi editor	• Demonstrate string related commands and its purposes	6	1	Searching for strings	Lecture	ppt		Grep command	Execute a shell script to find a string		http://www.computerhope.com/unix/uvi.htm	Prepare a presentation with screenshots (15 slides) on managing user account.		
4	VI editor	4.1	A&B	• Explain the process of yanking	• Write the steps to yank a line of text and paste the copied contents to the last line	7	1	Yanking	Lecture	ppt/Hands-on		Introduction to yanking	Purpose of yanking		http://www.dba-oracle.com/linux/t_linux_54_cutting_copying_paste.htm	Name the administrative functions that cannot be performed by a non-privileged user.		
4	VI editor	4.2	A&B	• Demonstrate how to execute a shell command using macros	• Explain the procedure to run macros in shell command	8	1	Running Shell Command Macros	Lecture	ppt								
4	VI editor	4.2	A&B	• Illustrate how to set various window properties with vi editor	• List the commands used to set widow position	9	1	Set Window	Lecture	ppt		Window properties	List the commands to set window position					
4	VI editor	4.2	A&B	• Demonstrate how to auto indent lines and insert line numbers for the file	• Write the commands used to auto indent and display line numbers	10	1	Set Auto Indent	Lecture	ppt		What is auto indent lines	Execute commands to auto indent					
4	VI editor	4.2	A&B	• Discuss the basic elements of communication process	• Identify the basic elements of communication process	11	1	Communicating with Other Users	Lecture	ppt		Basic elements of communication process	Identify the basic elements					
4	VI editor	4.2	A&B	• Demonstrate how UNIX administrators communicate with other users using mail, wall, send, mesg, and ftp	• Use various commands to communicate with other users	12	2					Usage of mail,wall,send,mesg,ftp commands	Execute commands used by administrators to communicate with the users					
5	System administration	5.1	A&B	• Identify common administrative tasks performed by the system administrator	• Summarise the responsibilities of system administrators	1	1	Common Administrative Tasks	Lecture	ppt		List of tasks performed by system administrator	Explain the responsibilities of system admin		http://wpollock.com/AUnix1/SysAdminTasks.htm			
5	System administration	5.1	A&B	• Explain how administrative files, configuration files, and log files can be identified	• Differentiate between configuration file and log files	2	1	Identifying Administrative Files, Configuration and Log Files	Lecture	ppt		What is administrative files	Distinguish between configuration file and log files					
5	System administration	5.1	A&B	• List the roles of system administrators	• Handle a user account			Role of System Administrator	Lecture	ppt								
5	System administration	5.1	A&B	• Demonstrate how to add and delete a user from the group	• Create and manage groups as a super user			Managing user accounts	Lecture	ppt		Managing groups	Add and delete a user from the group		https://www.washington.edu/ft870/			
5	System administration	5.1	A&B	• Illustrate the process of creating and managing groups as a super user	• Amend permission and ownership as a super user	3	1	Changing Permissions and Ownerships	Lecture	ppt		Purpose of chown command	Change permissions and ownership		http://www.cybercitibiz/faq/what-is-the-role-of-the-system-administrator/			
5	System administration	5.1	A&B	• Illustrate the process of disabling user accounts	• Explain how to identify the users form the same group	4	1	Creating and Managing Groups	Lecture	ppt								
5	System administration	5.2	A&B	• Explain different types of filesystem available in Linux	• Demonstrate on how to disable user account	5	1	Modifying Group Attributes	Lecture	ppt		File system available in Linux	Disable a user acccount		http://www.tutorialspoint.com/unix/unix-user-administration.html			
5	System administration	5.2	A&B	• Describe how to create a new filesystem after partitioning of hard disk	• Mount a file in the file system	6	1	Temporary Disabling of User's Accounts	Lecture	ppt								
5	System administration	5.2	A&B	• Illustrate mounting and unmounting file system	• Monitor system performance through various open source tools	7	1	Mounting and Unmounting File System	Lecture	ppt								
5	System administration	5.2	A&B	• Explain the process of checking and monitoring system performance	• Identify the security enabled features of UNIX systems	8	1	Checking and Monitoring System Performance	Lecture	ppt		Process of monitoring system performance	List out the security features of Unix		https://www.freebsd.org/doc/handbook/users-synopsis.html			
5	System administration	5.2	A&B	• Discuss file security and permission in detail	• Use crypt command to encrypt file	9	1	File Security and Permissions	Lecture	ppt		What is crypt command	Encrypt a file using crypt command		http://www.idevelopment.info/data/Unix/Linux/LINUX_PartitioningandFormattingSecondHardDrive_ext3.sht ml	Do a research on system performance monitoring tools and prepare report on that.		
5	System administration	5.2	A&B	• Describe how to become a super user	• Use uname command to retrieve system information	10	1	Becoming Super User using su command	Lecture	ppt		What is a super user	Become a super user using su command		http://www.tecmint.com/command-line-tools-to-monitor-linux-performance/			
5	System administration	5.2	A&B	• Illustrate how to extract system information using uname command	• Install and remove packages using rpm command	11	1	Getting System Information using uname command	Lecture	ppt		uname command	Retrieve the system informantion using uname command		http://www.ansoncheung.k.info/article/7-useful-command-tools-monitor-linux-performance			
5	System administration	5.2	A&B	• Explain how to install and remove packages using rpm command		12	1	Installing and Removing Packages using rpm command	Lecture	ppt		Installing packages	Remove packages		http://www.rpm.org/max-rpm/ch-rpm-erase.html			

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SACRED HEART COLLEGE(AUTONOMOUS), THEVARA
DEPARTMENT OF COMPUTER SCIENCE
COURSE PLAN
ACADEMIC YEAR 2016-2017
DISCRETE MATHEMATICS

Module Name	Chp	Section	Learning Objectives	Learning Outcomes	Session No.	Hours	Topic	Mode of Delivery	Methodology	Guest Faculty Assistance	Pre-class readings	Post-class tasks	Ref Books	Web Resources	Activities	Topic Coverage (Actual) including activities	Remarks
Preliminaries			Describe basic set theory	Outline the definition of set	1	45 min	**Basic set Theory terminology and notation** a) Definition and representation b) Practice problems	Black Board/ PPT					1. Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill. 2. S. Lipschutz : Set Theory and related topics (Second Edition), Schaum Outline				
			Describe types of sets	Elaborate types of sets with example	2	45 min	**Basic set Theory terminology and notation** a) Types of sets b) Practice problems	Black Board					1. Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill. 2. R.G.Stoll - Set Theory and Logic				
			Explain the set operations and representation using Venn diagram	solve the problems using different set operations and represent using Venn diagram	3	45 min	**Venn diagrams, truth table and proof** a) Set operations b) Representation using Venn diagram c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain the Proofs using Venn diagrams and Set theorem and identities	Elabourate set theorem and identities	4	45 min	**Venn diagrams, truth table and proof** a) Proofs using Venn diagrams and Set theorem and identities b) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Demonstrate Cartesian product	outline Cartesian product	5	45 min	**Functions and relations, partial orderings and equivalence relations** a) Cartesian product b) Practice problems	Black Board /PPT					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Demonstrate the term relations and types of relations (reflexive, symmetric, asymmetric, anti-symmetric)	Elaborate types of relations (reflexive, symmetric, asymmetric, anti-symmetric)	6	45 min	**Functions and relations, partial orderings and equivalence relations** a) Relations, types of relation (reflexive, symmetric, asymmetric, anti-symmetric) b) Practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Describe Functions, Types of functions (one – one, onto, bijection, inverse, composition)	Differentiate Types of functions (one – one, onto, bijection, inverse)	7	45 min	**Functions and relations, partial orderings and equivalence relations** a) Functions, Types of functions (one – one, onto, bijection, inverse, composition)	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain Mathematical induction	Elabourate mathematical induction	8	45 min	**Mathematical induction** a) Practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain application of hamming codes and applications	List the examples and applications of hamming code	9	45 min	**An application of hamming codes.** a) Definition, example, algorithm for hamming code, application	Black Board/PPT					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
Combinatorics			Explain Fundamental Counting Principle with examples	Elaborate Fundamental Counting Principle with example	10	45 min	**The theory counting** a) Fundamental Counting Principle b) Examples using the counting principle c) practice problems	Black Board/ PPT					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Describe the multiplication rule and sample spaces	Solve problems using multiplication rules	11	45 min	**The theory counting** a) The multiplication rule b) Sample Spaces C) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain Ordered sample and perm	Finding Permutations by Hand	12	45 min	**The theory counting** a) Ordered sample and permutations,Examples b) Finding Permutations by Hand c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Compare Unordered samples without repetition and Combinations	Write Combinations by Hand	13	45 min	**The theory counting** a) Unordered samples without repetition and Combinations b) Finding Combinations by Hand, Examples c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Difference between Permutations and Combinations	Differentiate between Permutations and Combinations	14	45 min	**The theory counting** a) Difference between Permutations and Combinations b) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Demonstrate Permutations with indistinguishable objects and Ordered versus unordered selections	Identify the Ordered and unordered selections	15	45 min	**The theory counting** a) Permutations with indistinguishable objects b) Ordered versus unordered selections c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Discuss the Multinomial coefficients and Unordered samples with repetition	Outline the Unordered samples with repetition	16	45 min	**The theory counting** a) Multinomial coefficients b) Unordered samples with repetition c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
Propositional Calculus			Describe the variable, connectives and Meaning of connectives	Explain variable, connectives and Meaning of connectives	17	45 min	**Proposition Propositional** a) Variable and connectives b) Meaning of connectives c) Practice problems	Black Board/ PPT					Petergray – Logic, Algebra and databases, Affiliated East West press pvt Ltd				
			Describe the Truth tables for compound propositions and Logically equivalent compound propositions	Explain truth table and Logically equivalent compound propositions	18	1 hr 30 min	**Compound proposition** a) Truth tables for compound propositions b) Logically equivalent compound propositions c) practice problems	Black Board					Petergray – Logic, Algebra and databases, Affiliated East West press pvt Ltd				
			Explain Axioms and laws and De-Morgan's law	Define Axioms and laws and De-Morgan's law	19	45 min	**Theorems from Boolean algebra** a) Axioms and laws b) De-Morgan's law c) practice problems	Black Board					Petergray – Logic, Algebra and databases, Affiliated East West press pvt Ltd				
			Explain Disjunctive normal form (DNF) and Conjunctive normal form (CNF)	Distingush between Disjunctive normal form (DNF),Conjunctive normal form (CNF)	20	45 min	**Normal forms for compound propositions** a) Disjunctive normal form (DNF) b) Conjunctive normal form (CNF) c) practice problems	Black Board					Petergray – Logic, Algebra and databases, Affiliated East West press pvt Ltd				
			Explain Chains of inference, Tautologies and instantiation, Logical equivalences and substitution	Explain Tautologies, instantiation and chain rule , modus ponens	21	45 min	**Rules of inference: chain rule and modus ponens** a) Chains of inference b) Tautologies and instantiation c) Logical equivalences and substitution d) practice problems	Black Board					Petergray – Logic, Algebra and databases, Affiliated East West press pvt Ltd				
			Proof by adopting a premise	Demonstrate Reduction ad absurdum	22	45 min	**Proof by adopting a premise** a) Reduction ad absurdum b) practice problems	Black Board /PPT					Petergray – Logic, Algebra and databases, Affiliated East West press pvt Ltd				
			Explain the proof by resolution	outline the advantages of resolution	23	45 min	**Proof by resolution** a) Advantages of resolution b) practice problems	Black Board					Petergray – Logic, Algebra and databases, Affiliated East West press pvt Ltd				
Graphs and Algorithms			Definition of graph and graph terminologies	Discuss Definition of graph, representation and Graph terminologies	26	45 min	**Introduction to graph theory** a) Definition of graph, representation b) Graph terminologies c) practice problems	Black Board/ PPT					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Differentiate Breadth First Search and Depth First Search	Discuss Breadth First Search and Depth First Search	27	45 min	**Introduction to graph theory** a) Breadth First Search. b) Depth First Search c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Definition of tree, representation.Tree terminologies. Types of trees	Identify the Types of trees	28	45 min	**Trees** a) Definition of tree, representation.Tree terminologies b) Types of trees c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Define spanning tree and Minimal spanning trees	Discuss minimal spanning trees	29	45 min	**Spanning trees** a) What is spanning tree? b) Minimal spanning trees c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain Kruskal's Algorithm	Demonstrate Kruskal's Algorithm	30	45 min	**Spanning trees** Kruskal's Algorithm	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain Prims Algorithm.	Demonstrate Prims Algorithm.	31	45 min	**Spanning trees** Prims Algorithm.	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Describe binary search tree and tree searching	Differentiate Inorder, Preorder, Postorder	32	45 min	**Binary trees** a) Binary Search Tree b) Tree searching.(Inorder, Preorder, Postorder)	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain Eulers theorem and Euler path	Define Eulers theorem	33	45 min	**Planar graphs and Euler's theorem,** a) Eulers theorem b) Euler path c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain Euler circuit and Eulerian Graph	describe Euler circuit and Eulerian Graph	34	45 min	**Planar graphs and Euler's theorem,** a) Euler circuit b) Eulerian Graph c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Demonstrate Single- Source Shortest path and Dijkstras Algorithm	Discuss about Single- Source Shortest path and Dijkstras Algorithm	35	45 min	**The shortest path problem** a) Single- Source Shortest path b) Dijkstras Algorithm c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				
			Explain All-pair Shortest path and Floyd's WarshallAlgorithm	Discuss about All-pair Shortest path and Floyd's WarshallAlgorithm	36	45 min	**The shortest path problem** a) All-pair Shortest path b) Floyd's WarshallAlgorithm c) practice problems	Black Board					Robert J mcEliece, Robert B Ash and Carol Ash – Introduction to discrete mathematics, Mc.Graw Hill.				

Mentor's Signature

Vertical Head Signature

ACADEMIC SESSION PLAN

Name of the Faculty: CHRISTY JACQUELINE

Course: operating system concepts

Semester: BCA 1ST yr SECOND sem

Period: From:NOV 2016 To: MARCH 2017

Module	Module Name	Chp	Section	Learning Objectives	Learning Outcomes	Session No.	Hours	Topic	Mode of Delivery	Methodology	Guest Faculty Assistance	Pre-class readings	Post-class tasks	Ref Books	Web Resources	Activities	Topic Coverage (Actual) including activities	Remarks
MODULE 1	INTRODUCTION TO OPERATING SYSTEM	1	A & B	operating system	Objectives and functions of OS	1	1	Introduction to Operating system	using power point slide and black board			Operating system		Operating System Concepts(ninth Edition) abraham Silberschatz				
MODULE 1	INTRODUCTION TO OPERATING SYSTEM	1.1	A & B	Evolution of OS	OS- Basics	2	1	Evolution of OS	using power point slide and black board			Introduction to Os, Different operating system	Revision					
MODULE 1	INTRODUCTION TO OPERATING SYSTEM	1.1	A & B	OS Structures	Importance of OOPs programming	3	1	Os structures	using power point slide and black board			OS structures	Revision					
MODULE 1	INTRODUCTION TO OPERATING SYSTEM	1.2	A & B	OS Components	Discussing the different type of data types in c++	4	1	Os Components, OS operations: dual mode and multimode operation	using power point slide and black board			OS components, os operations	Revision					
MODULE 1	INTRODUCTION TO OPERATING SYSTEM	1.2	A & B	operating system services	discussing about the different OS services?	5	1		using power point slide and black board				Revision			class Quiz		
MODULE 1	INTRODUCTION TO OPERATING SYSTEM	1.2	A & B	operating system, system calls	system calls	6	1	Os system calls	using power point slide and black board			System calls	Assignment given based on the topic taught on that day.					
MODULE 1	INTRODUCTION TO OPERATING SYSTEM	1.2	A & B	virtual machines	virtual machine	7	1	Virtual machine	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 1	PROCESS MANAGEMENT	2.1	A & B	processes	Defining Processes	8	1	Processes	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 1	PROCESS MANAGEMENT	2.1	A & B	process concept	Define in detail about process concept	9	1	Process concept	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 1	PROCESS MANAGEMENT	2.2		Process scheduling	discuss about the process scheduling	10	1	Process Scheduling	using power point slide and black board							Activities given in TOC		
	PROCESS MANAGEMENT	2.4		process management	explain about process	11	1	Process management	black board									
MODULE 2	PROCESS MANAGEMENT	2.5		operations on processes	Different operations on processes	12	1	Operations on Processes	using power point slide and black board				Revision			class quiz		
MODULE 2	PROCESS MANAGEMENT	2.6		interprocess communication, communication in client-server systems	How to perform interprocess communication	13	1	InterProcess communication	using power point slide and black board			Revision						
MODULE 2	PROCESS MANAGEMENT	2.7	A & B	Threads	Explain about the single and multithreaded processes	14	1	Threads	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	PROCESS MANAGEMENT	2.8	A & B	Cpu Scheduling	discuss about the cpu scheduling	15	1	Cpu scheduling	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	PROCESS MANAGEMENT	2.9	A & B	Process Synchronization	elaborate about the process synchronization in detail	16	1	Process Synchronization	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	PROCESS MANAGEMENT	2.1	A & B	semaphores	Explain about the semaphores in detail	17	1	Semaphores	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	PROCESS MANAGEMENT	2.11	A & B	deadlocks	explain about deadlock	18	1	Deadlock?	using power point slide and black board			seminar	Assignment given based on the topic taught on that day.					
MODULE 2	PROCESS MANAGEMENT	2.12	A & B	deadlocks	System model, deadlock characterization.	19	1	Methods of deadlock	using power point slide and black board				Assignment given based on the topic taught on that day.			class quiz		
MODULE 2	PROCESS MANAGEMENT	2.13	A & B	deadlocks	Deadlock avoidance, detection and recovery	20	1	Deadlock	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.1	A & B	memory management	Explain in detail about the memory management in detail	21	1	Memory management	using power point slide and black board			**seminar**	Revision					
MODULE 3	STORAGE MANAGEMENT	3.2		virtual management	discuss about the virtual memory management	22	1	virtual management	using power point slide and black board			virtual management	Revision			test paper		
MODULE 3	STORAGE MANAGEMENT	3.3		virtual management	explain in detail about demand paging	23	1	demand paging	using power point slide and black board				Revision					
MODULE 3	STORAGE MANAGEMENT	3.4		virtual management	why page replacement algorithms are used in memory management	24	1	page replacement algorithms	using power point slide and black board			seminar	Revision					
MODULE 3	STORAGE MANAGEMENT	3.5		virtual management	explain how how the frames are being allocated	25	1	allocation of Frames	using power point slide and black board				Revision			Activities given in TOC		
MODULE 3	STORAGE MANAGEMENT	3.6	A & B	virtual management	What is thrashing	26	1	Thrashing	using power point slide and black board				Revision					
MODULE 3	STORAGE MANAGEMENT	3.7	A & B	virtual management	Explain in details about different operating system	27	1	Operating System examples	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.8	A	virtual management	Page size and other considerations	28	1	Page size	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.9	B	virtual management	Elaborate about Demand Segmentation	29	1	Demand Segmentation	using power point slide and black board				Revision					
													Revision					
MODULE 3	STORAGE MANAGEMENT	3.1	A & B	File system interface	write short note on file concepts	30	1	File concepts	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.11	A & B	File system interface	What are the different types of access methods	31	1	File concepts	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.12	A & B	File system interface	Explain about the directory structure	32	1	Directory Structure	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.13	A & B	File system interface	Discuss on File System mounting	33	1	File system Mounting	using power point slide and black board			File concepts	Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.14	A & B	File system interface	Elaborate on file sharing and protection methods	34	1	File sharing, protection and consistency semantics	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.15	A & B	File system implementation	explain how about the file system structure	35	1	file system structure	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.16	A & B	File system implementation	What are different file system implementation methods	36	1	File system implementation	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.17	A & B	File system implementation	explain about the different file allocation methods	37	1	File allocation methods	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.18	A & B	File system implementation	How the free space management is being done	38	1	Free space management	using power point slide and black board				Revision			Activities given in TOC		
MODULE 3	storage management	3.19	A & B	Disk Management	Explain in detail about the disk structure	38	1	Disk Structure	blackboard			File systems						
MODULE 3	STORAGE MANAGEMENT	3.2	A & B	Disk Management	How the disk scheduling is done	39	1	Disk Scheduling	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	STORAGE MANAGEMENT	3.21	A & B	Disk Management	explain about swap-space management	40	1	Swap space management	using power point slide and black board				Assignment given based on the topic taught on that day.			test		
MODULE 3	STORAGE MANAGEMENT	3.22	A & B	Disk Management	How do you mean by stable storage implementation	41	1	Stable storage implementation	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	PROTECTION AND SECURITY	4.1	A & B	Protection	What are the different goal of protection	1	1	Goals of Protection	using power point slide and black board				Assignment given based on the topic taught on that day.			test		
MODULE 4	PROTECTION AND SECURITY	4.2	A & B	Protection	What are the different domains of protection available	2	1	Domain of protection	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	PROTECTION AND SECURITY	4.3	A & B	Protection	explain about the access matrix	3	1	Access matix	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	PROTECTION AND SECURITY	4.4	A & B	Protection	Define access matrix	4	1	Access matix, implementation of access matrix	using power point slide and black board									
MODULE 4	PROTECTION AND SECURITY	4.5	A & B	Protection	How to implement revocation of access rights	5	1	Revocation of access rights	using power point slide and black board									
MODULE 4	PROTECTION AND SECURITY	4.6	A & B	Protection	Explain about the language based protection	6	1	Language- based protection	using power point slide and black board									

MODULE 4	**PROTECTION AND SECRETY**	**4.7**	A & B	Protection	what ate capability based system	7	1	Capability based systems	using power point slide and black board
MODULE 4	**PROTECTION AND SECRETY**	**4.8**	A & B	security	What are the different security issues	8	1	Security Issues	using power point slide and black board
MODULE 4	**PROTECTION AND SECRETY**	**4.9**	A & B	security	Explain about the program threats and system threats	9	1	Program threats and system threats	using power point slide and black board
MODULE 4	**PROTECTION AND SECRETY**	4.1	A & B	security	Discuss on Computer Security classification	10	1	Computer security classifications	using power point slide and black board

ACADEMIC SESSION PLAN

Name of the Faculty: CHRISTY JACQUELINE

Course: OOPS WITH C++

Semester: BCA 1ST yr SECOND sem

Period: From:NOV 2016 To: MARCH 2017

Module	Module Name	Chp	Section	Learning Objectives	Learning Outcomes	Session No.	Hours	Topic	Mode of Delivery	Methodology	Guest Faculty Assistance	Pre-class readings	Post-class tasks	Ref Books	Web Resources	Activities	Topic Coverage (Actual) including activities	Remarks
MODULE 1	EVOLUTION OF PROGRAMMING METHODOLOGIES	1	A & B	explaining the the different programming languages	Describing the characteristics of the each programming language	1	1	Procedure oriented languages	using power point slide and black board			Evolution of programming language	Revision	Object Oriented porgramming with c++, Robert Lafore, E Balaguruswamy				
MODULE 1	PROCESS ORIENTED VS OBJECT ORIENTED	1.1		major advantages and disadvantages of procedure oriented and object oriented programming language	Features of Object oriented and comparing both the language	2	1	Programming language comparison	using power point slide and black board				Revision			test		
MODULE 1	BASICS OF OOPS LANGUAGE	1.1		Characteristics, merits and demerits of oops is discussed	Importance of OOPs programming	3	1	Features of OOPs	using power point slide and black board			OOPs						
MODULE 1	DATA TYPES	1.2		data types	Discussing the different type of data types in c++	4	1	Data types with example	using power point slide and black board									
MODULE 1	INPUT AND OUTPUT	1.2		different input and output header files	discussing about the different header files used for input and output	5	1		using power point slide and black board				Revision			class Quiz		
MODULE 1	OPERATORS AND EXPRESSIONS IN C++	1.2		available operators in c++	different operators used in c++ and explaining about the expression	6	1	Operators and Expression	using power point slide and black board			Data types	Assignment given based on the topic taught on that day.					
MODULE 1	KEYWORDS IN C++	1.2	A & B	comparing and pointing out the difference between the keywords and	different keywords in c++	7	1	Explanation about the keywords	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 1	STATEMENTS: BRANCH STATEMENTS AND LOOPS STATEMENTS	1.2	A & B	Different types of statements: Looping, Decision making statements along with syntax and examples are discussed	decision and looping statements	8	1	different types of statements	using power point slide and black board			Opertors and expression	Assignment given based on the topic taught on that day.					
MODULE 1	ARRAYS	1.2	A & B	how to define array, storing of array elements in memory	Describing the characteristics of the each programming language	9	1	Arrays	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 1	STRINGS AND STRUCTURES	1.2		how to use structure		10	1	Arrays and strings	using power point slide and black board							Activities given in TOC		
												Statement: Types						
MODULE 2	CLASS	2.1		defining class	explaining about the basic features of c++	1	1	Class	using power point slide and black board				Revision					
MODULE 2	ACCESS SPECIFIERS	2.1		Elaborating the major component of c++	discussing about the different access specifiers such private, pulic and protected	2	1	access Specifiers	using power point slide and black board									
MODULE 2	OBJECTS AS FUNCTION ARGUMENTS	2.1		Objects as function argumnets	how to use object as function argument	3	1	Object as function arugment, illustrating with example program	using power point slide and black board			Class: Revision	Assignment given based on the topic taught on that day.					
MODULE 2	DEFINING OUTSIDE CLASS AND FUNCTION	2.1		Describe the different types of class and structure	Defining class and structure	4	1	elaborating with example program, differentiation between the class and structure	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	ARRAY AS CLASS MEMBER	2.1		explaining array as class member	how to use the array as a class member	5	1	example program to illustrating using the array as class member	using power point slide and black board			Fucntions	Assignment given based on the topic taught on that day.					
MODULE 2	ARRAY OF OBJECTS	2.1		Defining array of objects	array of objects	6	1	How to define array of objects in c++	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	FUNCTIONS IN C++	2.2		functions	functions in c++	7	1	How to use function in c++	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	OVERLOADING OF FUNCTIONS	2.2		function overloading	how to perform function overloading,	8	1	illustrating with example program to perform function overloading	using power point slide and black board				Assignment given based on the topic taught on that day.			class quiz		
MODULE 2	INLINE FUNCTION	2.2		how to use inline function, when to use and limitations of inline function	describing the working of inline function	9	1	Working of Inline function	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 2	STORAGE CLASSES	2.2		defining the storage classes	different type of storage classes	10	1	Explaining the different types of storage classes	using power point slide and black board				Revision					
MODULE 2	CONSTRUCTOR AND DESTRUCTOR	2.2		define construtor	What is constructor and what is the need of constructor	11	1	different types of constructor	using power point slide and black board			Inline Function	Revision			test paper		
MODULE 2	DYNAMIC CONSTRUCTOR	2.2		defining the dynamic constructor	explaining with an example program	12	1	Dynamic constructor	using power point slide and black board				Revision					
MODULE 2	CONSTRUCTOR OVERLOADED	2.2		Discussing about the constructor overloading and how to perform the constructor overloading	Performing the constructor overloading with an example program	13	1	Constructor overloading	using power point slide and black board				Revision					
MODULE 2	COPY CONSTRUCTOR	2.2		Copy constructor	Importance of copy constructor	14	1	illustrating with example program to use copy constructor	using power point slide and black board				Revision			Activities given in TOC		
MODULE 3	OPERATOR OVERLOADED	3.1	A & B	Performing operator overloading	How to perform operator overloading	1	1	operator overloading	using power point slide and black board				Revision					
MODULE 3	OPERATOR OVERLOADED	3.1	A & B	Different types of operator overloading	explain with examples of different types of operator overloading	2	1	types of operator overloading	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	DATA CONVERSION	3.2	A	data conversion	Defining data conversion	3	1	Conversion between objects and basic types	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	DATA CONVERSION	3.2	B	data conversion	Conversion between objects of different class	4	1	Inheritance	using power point slide and black board				Revision					
MODULE 3	INHERITANCE	3.1	A & B	Inheritance, Need, Advantages,	What is inheritance? What are the advantages of implementing inheritance	5	1	Inheritance	using power point slide and black board				Revision					
MODULE 3	ACCESS SPECIFIERS	3.1	A & B	using access specifiers	Different access specifiers when used with the inheritance	6	1	Access specifiers: Protected	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	USING CONSTRUCTORS AND DESTRUCTORS IN DERIVED CLASS	3.2	A & B	Inheritance	using constructors and destructors in derieved class	7	1	Using constructors in derived class	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 3	MODES OF INHERITANCE	3.2		Different types of inheritance	How to implement different types of inheritance	8	1	Implementing the different types of inheritance	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	POINTER	3.1	A & B	What is pointer?	pointer declaration and access	10	1	Defining pointer and using pointers in programs	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	POINTER	3.1	A & B	pointer to void, pointer and arrays, pointer constant, pointer variable	details about pointers	11	1	pointers in Detail	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	MEMORY MANAGEMENT	3.2	A & B	using new and delete for memory allocation	memory allocation	12	1	memory management in pointers	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	POINTER TO OBJECT REFERENCING MEMBERS	3.2	A & B	pointe to object refercing member using pointers,	how to implement pointer to object referencing member using pointers	13	1	pointers in Detail	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	VIRTUAL FUCNTION	3.3	A & B	virtual function	What is virtual function in c++	14	1	Virtual function	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 4	ABSTRACT CLASS AND VIRTUAL BASE CLASS	3.3	A & B	What is abstract class and virtual base class	explanation of abstract class and virtual base class with one example program	15	1	abstract class and virtual base class	using power point slide and black board				Revision			Activities given in TOC		
MODULE 4	FRIEND FUNCTION AND STATIC FUCNTION	3.4	A & B	Friend function	What is friend fucntion in c++	16	1	Friend function and static function	blackboard									
MODULE 5	TEMPLATES	4.1	A & B	templates	What is templates	1		Templates	using power point slide and black board				Assignment given based on the topic taught on that day.	E. Balaguruswamy				

MODULE 6	**TEMPLATES**	**4.1**	A & B	introduction to templates, class templates, fcuntion templates, member function templates,	explain in detail about templates in c++	2	1	Templates	using power point slide and black board				Assignment given based on the topic taught on that day.			test		
MODULE 6	**EXCEPTION HANDLING**	**4.1**	A & B	exception handling	What are exceptions? How do we handle the exception in c++	3	1	exception handling	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 6	**CONSOLE INPUT OUTPUT OPERATOR**	**4.2**	A & B	console input output operator	c++ stream, stream classes	4	1	Consol inputoutput operator	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 6	**CONSOLE IO OPERATOR**	**4.2**	A & B	unformatted i/o operators	explain about unformatted input output operators	5	1	Consol inputoutput operator	using power point slide and black board				Assignment given based on the topic taught on that day.			test		
MODULE 6	**CONSOLE INPUT OUTPUT OPERATOR**	**4.2**	A & B	formatted i/o opertaors	explain about formatted input output operators	6	1	Consol inputoutput operator	using power point slide and black board				Assignment given based on the topic taught on that day.					
MODULE 6	**MANIPULATORS**	**4.2**	A & B	define manipulators	What is manipulator in c++	7	1	manipulators	using power point slide and black board				Assignment given based on the topic taught on that day.					

SACRED HEART COLLEGE(AUTONOMOUS), THEVARA
DEPARTMENT OF COMPUTER SCIENCE

COURSE PLAN

ACADEMIC YEAR 2016-2017

Course Name	Data Structure using C
Course Code	U2CRBCA6
Course Credits	3
Course Instructor	Shailesh S

Course Objective	It is important for every Computer Science student to understand the concept of **Information** and how it is **organized** or how it can be utilized. If we arrange some data in an appropriate sequence, then it forms a **structure** and gives us a meaning. This meaning is called **Information**. This course covers the basic concepts of different data structures which are the basic building blocks of Programming and problem solving.

Course Outcome	1	The concept of elementry data organization.
	2	Dynamic memory allocation, pointer, recursion and string operation
	3	Algorithm and its efficiency measure by means of asympotic notation.
	4	Thorugh knowledge of list data structure and its application such as Array, Stack, Queue and Link List
	5	Introductio to tree and Graph Data structure
	6	Concept of Internal and external sorting algorithm and the basic searching operation

Module	Module Name	Chp	Section	Learning Objectives	Learning Outcomes	Session No.	Hours	Topic	Mode of Delivery	Methodology	Guest Faculty Assistance	Industry Expert Assistance	Pre-class readings		Post-class tasks		Ref Books	Web Resources	Activities		Weightage	Evaluation	Topic Coverage (Actual) including activities		Remarks
													FTF	LMS	FTF	LMS			FTF	LMS	(in Percentage)		FTF	LMS	
I	Introduction to Data structures	1.1	Introduction to Data Structures	Describe Data Structures and its types	Importance of Datastructure	1	1	Introduction and classification of data structure & Elementry data	Lecture	Interactive PPT	No	No	Identify the needs of Data structure	Explore the video for Basic Data Structure	Outline the different types of data structures	Study the ppt & SLM for Basic Data Structure and resolve the SAQs.	1. Data Structures and program designing using 'C' by Robert Kruse, II Edition, Pearson Education 2. Data Structures and Algorithm Analysis in C by Weiss, II Edition , Pearson Education, 2001 3. Data structures in C by D. Srivastava, II Edition,BPB publishers, 2004 4. Study meterial from i-Nurture Pro.	http://nptel.ac.in/courses/Webcourse-contents/IIT-%20Guwahati/data_str_algo/frameset.htm		Cover the Practice Quiz for Basic Data Structure and Pointer & Recurssion					
I		1.1	Time and Space Complexity	Summarize the role of algorithms in programming	Algorithm and its complexity	2	1	Introduction to Algorithm & complexity	Lecture	Interactive PPT	No	No	What is algorithm and its importance		Elaborate asymptotic notations with example				Divide the students into two groups, Give selection sort algorithm and insertion sort algorithm to each of the groups, Students should calculate the time complexities for both						
I		1.1	Time and Space Complexity			3	1	Complexity analysis of algorithm	Lecture	Interactive PPT	No	No	how to design algorithm		Calculate the time and space complexities			https://www.cs.utexas.edu/users/djimenez/utsa/cs1723/lecture2.html							
I		1.1	String Processing	Explain the string processing with its functions	Concept of string	4	1	Character array & String processing	Lecture	Interactive PPT	No	No	About array and its index		Concept of character array										
I		1.1	String Processing			5	1	String processing functions	Lecture	Interactive PPT, Demonstration	No	No			List down the string processing functions			http://www.compsci.hunter.cuny.edu/~sweiss/resources/cstrings.pdf	Execution of simlpe and speified program on Pointer			Class test 1			
I		1.2	Declaring and initializing pointers	Demonstrate the role of Pointers in data structures	understanding Pointer	6	1	Pointer, Accessing variable and structure pointer	Lecture	Interactive PPT, Demonstration	No	No	What is pointer	Explore the video for Pointer & Recursion	Declaring pointers and accessing the variables	Study the ppt & SLM for Pointers & Recursion and resolve the SAQs.		http://cslibrary.stanford.edu/106/							
I		1.2	Memory allocation functions	Demonstrate memory allocation and address variable	Difference between SMA & DMA	7	1	Memory allocation	Lecture	Interactive PPT	No	No	malloc ,calloc,free,realloc		Differentiate static and dynamic memory allocation			https://www.programiz.com/c-programming/c-dynamic-memory-allocation	Prepare a presentation on pointers and dynamic memory allocation						
I		1.2	Memory allocation functions			8	1	DMA functions	Lecture	Interactive PPT, Demonstration	No	No	Limitation of SMA												
I		1.2	Recursion	Explain Recursion and its advantages	Importance of recursion	9	1	Concept and example of Recerssion	Lecture	Interactive PPT, Demonstration	No	No	compare recursion and its performance		List the advantages of Recursion			http://www.doc.ic.ac.uk/~wjk/c++Intro/RobMillerL8.html							
I						10	1	Summary of Module I	Lecture	Interactive PPT	No	No										Assignment I			
II	Searching and Sorting	2.1	Introduction to searching & sequential search	Describe sequential search using iteration and recursion	Concept and comperision of Searching algorithm	11	1	Introduction to Searching & Linear search and analysing complexity	Lecture	Interactive PPT, Demonstration	No	No	Array index	Explore the video forSearching	Elaborate searching techniques with example	Study the ppt & SLM for Searching Technique and resolve the SAQs.		http://interactivepython.org/runestone/static/pythonds/SortSearch/TheBinarySearch.html	Stack 10 reference books in ascending order of the title ', Ask the students to write a C programme using binary search to search book based on the title.	Cover the Practice Quiz for Searching and Sorting technique					
II		2.1	Binary search	Describe Binary search using iteration and recursion		12	1	Binary Search and analysing complexity	Lecture	Interactive PPT, Demonstration	No	No	binary search virtualization should be given by example		Compute time complexities for binary search and sequential search algorithm										
II		2.2	Basics of sorting techniques	Explain the need of sorting	Concept and comperision of sorting algorithm	13	1	Introduction to Sorting, insertion sort algorithm & analysis	Lecture	Interactive PPT, Demonstration	No	No	Application of sorting in real life		Calculate the complexities of all sorting algorithms, and Identify the efficient sorting algorithm.	Study the ppt & SLM for Sorting Technique and resolve the SAQs.		http://pages.cs.wisc.edu/~bobh/367/SORTING.html							
II		2.2	Sorting techniques	Demonstrate the important sorting algorithms with example		14	1	Bubble sort algorithm & analysis	Lecture	Interactive PPT, Demonstration	No	No	virtualization example of bubble sort						Divide the class into 5 groups, Assign an algorithm and list of numbers to each group , Students should sort the list using assigned algorithm.						
II		2.2	Sorting techniques			15	1	Quict sort algorithm & analysis	Lecture	Interactive PPT, Demonstration	No	No	virtualization examplequick sort	Explore the video for Sorting				http://www.nptelvideos.in/2012/11/data-structures-and-algorithms.html							
II		2.2	Sorting techniques			16	1	Selection Sort algorithm & analysis	Lecture	Interactive PPT, Demonstration	No	No	virtualization example selection sort									Class test 2			
II		2.2	Sorting techniques			17	1	Merge Sort algorithm & analysis	Lecture	Interactive PPT, Demonstration	No	No	virtualization example merge sort	Explore the video for Sorting											
II						18	1	Summary of Module II	Lecture		No	No										Assignment II			
III	Stack and Queue	3.1	Introduction to Stacks	Outline the basic features of stack	Importantance of Stack, advantages, disadvantages and implementation	19	1	Introduction to Stack	Lecture	Interactive PPT	No	No		Explore the video for Operation on Stack	Explain operations on stack	Study the ppt & SLM for Stacke and resolve the SAQs.		http://www.bowdoin.edu/~ltoma/teaching/cs210/fall10/Slides/StacksAndQueues.pdf	Divide the students into 4 groups. Below are 4 infix expression, assign an expression to each group. Each group should convert the given expression to postfix and prefix expression using stack. a. 3+4*5/6, b. 6 * (77 + 8 *15) + 20, c. (300+23)*(43-21)/(84+7), d. (4+8)*(6-5)/((3-2)*(2+2))	Cover the Practice Quiz for Stack and Queue					
III		3.1	Operations on Stack	Array and link list representation of Stack		20	1	Array representation of stack	Lecture	Interactive PPT, Demonstration	No	No	Overview of array												
III		3.1	Operations on Stack			22	1	Applicattion of Stack	Lecture	Interactive PPT	No	No	About recurssion and mathematical expression		Explain string recursion applications of stack										
III		3.1	Polish Notations	Discuss the evaluation of postfix expression using stack	Application of stack in evaluation of Mathematical expression	23	1	Infix to Post fix conversion & evaluation	Lecture	Interactive PPT	No	No	what is infix what is post fix		Compute given postfix expression using stack			http://csis.pace.edu/~wolf/CS122/infix-postfix.htm							
III		3.1	Polish Notations			24	1	Infix to Post fix conversion & evaluation (Implementation)	Lecture	Interactive PPT, Demonstration	No	No										Class test 3			
III		3.2	Introduction to Queue	Outline the basic features of queue	Importantance of Queue, advantages, disadvantages and implementation	25	1	Queue defination and Application	Lecture	Interactive PPT	No	No	Find queue in real life	Explore the video for Operation on Queue	Demonstrate queue with its operations	Study the ppt & SLM for Queue and resolve the SAQs.		https://www.cs.cmu.edu/~adamchik/15-121/lectures/Stacks%20and%20Queues/Stacks%20and%20Queues.html	Implement the priority queue algorithm, for its all basic operation and and list the Complexity in term of Big O						
III		3.2	Operations on queue	Array and link list representation of queue		26	1	Array representation of queue	Lecture	Interactive PPT, Demonstration	No	No	read Array data structure		Implement double ended queue using linked list										
III		3.2	Types of Queue			28	1	Type of queue	Lecture	Demonstration	No	No	real world example		Identify requirement of priority queue										
III						29	1	Summary of Module III	Lecture		No	No										Assignment III			
IV	Linked List	4.1	Linked List Specifications	Explain components and representation of linked list	importantance of LINK LIST, advantages, disadvantages and implementation	30	1	Link List & Type of Link List	Lecture	Interactive PPT	No	No	Concept of structure pointer	Explore the video for Representation of Link List	Identify the components of linked lists, Discuss insertion and deletion operations in singly linked	Study the ppt & SLM for Introduction to Link List and resolve the SAQs.		https://www.cs.cmu.edu/~adamchik/15-121/lectures/Linked%20Lists/linked%20lists.html	Design an application to manage the detail of students of your class using Singly linklist	Cover the Practice Quiz for Link List					
IV		4.1	Linked List Specifications			31	1	Application, advantage & disvantage	Lecture	Interactive PPT	No	No													
IV		4.1	Type of Linked Lists	Differentiate singly, doubly and circular linked list		32	1	Operation on singly link list	Lecture	Interactive PPT, Demonstration	No	No	Basics of link list	Explore the video for Operation on Link List		Study the ppt & SLM for Operation on Link List and resolve the SAQs.									
IV		4.2	Operations on Singly List			33	1		Lecture	Interactive PPT, Demonstration	No	No										Class test 4			
IV		4.2	Operations on Singly List			34	1		Lecture	Interactive PPT, Demonstration	No	No													
IV						35	1	Summary of Module IV	Lecture		No	No										Assignment IV			
V	Tree Graphs and their Applications	5.1	Definition of Tree	Explain tree and its different types	Overview of non linear data structure (Tree & Graph)	36	1	Tree defination and application	Lecture	Example	No	No	Find the heirarchy in yor family		Discuss tree and various types with example	Study the ppt & SLM for Tree Fundamentals and resolve the SAQs.		https://www.cs.cmu.edu/~adamchik/15-121/lectures/Trees/trees.html	Form a binary search tree using the given elements as 10,26,52,76,13,8,3,33,60,42 and perform all the travasal operation	Cover the Practice Quiz for tree and graph					
V		5.1	Tree terminology	Tree terminology		37	1	Different tree terminology	Lecture	Interactive PPT	No	No	why tree structure is used												
V		5.1	Types of Trees	Deep understanding on Binary tree	Binary tree & its application	38	1	Binary tree & its type	Lecture	Interactive PPT	No	No	which application uses tree												
V		5.1	Binary Tree			39	1	Implementation of Binary tree	Lecture	Interactive PPT, Demonstration	No	No	Concept of array and link list		Explain array representation of binary tree										
V		5.1	Binary Search Tree	Demonstrate binary search tree with an example	Implementation of BST	40	1	Binary Search Tree & its application	Lecture	Example	No	No	What is binary tree		Outline the steps to traverse inorder, preorder and postorder										
V		5.1	Binary Search Tree operation			41	1	BST Travasal	Lecture	Interactive PPT, Demonstration	No	No	What is travasal	Explore the video for Tree Travasal	Construct binary tree from inorder, preorder and postorder										
V		5.1	Binary Search Tree operation			42	1	Implementation of BST	Lecture	Interactive PPT	No	No													
V		5.1	Heap	Illustrate max heap and min heap technique	Basic of heap tree	43	1	Heap Tree	Lecture	Interactive PPT, Demonstration	No	No	Read about compleat binary tree and array		Visualization of Heapsort			http://www.comp.dit.ie/rlawlor/Alg_DS/sorting/heap%20sort.pdf	Convert an array [10,26,52,76,13,8,3,33,60,42] into a maximum heap						
V		5.2	Definition and type of graph	Describe graph and its types	Basic of graph and its application in real life	44	1	Graph concept and application	Lecture	Example	No	No	Find the airline road map of india		Outline applications of graph	Study the ppt & SLM for Graph Fundamentals and resolve the SAQs.		http://textofvideo.nptel.iitm.ac.in/106102064/lec24.pdf	Consider the graph G with vertices V ={1, 2, 3, 4} and edges E={(1,2),(2,3),(3,4),(4,1),(2,1),(2,4)}, For every vertex u, find its indegree in(u) and its out degree out(u), What is the value of the following sum for this graph?						
V		5.2	Definition and type of graph			45	1	Representation of graph	Lecture	Interactive PPT	No	No	Concept of MATRIX and link list					http://textofvideo.nptel.iitm.ac.in/106102064/lec25.pdf				Class test 4			
V		5.2	Graph Traversal	Discuss the depth first search and breadth first search algorithm	Travasal technique of Graph	46	1	Graph BFS Travasal	Lecture	Interactive PPT	No	No	What is levels in tree or graph		Compare DFS and BFS			http://textofvideo.nptel.iitm.ac.in/106102064/lec26.pdf							
V		5.2	Graph Traversal			47	1	Implementation of BFS	Lecture	Interactive PPT, Demonstration	No	No													
V		5.2	Graph Traversal			48	1	Graph DFS Travasal	Lecture	Interactive PPT	No	No	What is depth of a node					http://textofvideo.nptel.iitm.ac.in/106102064/lec27.pdf							
V		5.2	Graph Traversal			49	1	Implementation of DFS	Lecture	Interactive PPT, Demonstration	No	No	how to calculate the path												
V						50	1	Summary of Module V	Lecture		No	No										Assignment V			